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ABSTRACT

A detailed examination of an individualized teacher education program is given. The analysis uses a systems approach to permit study of the entire program and the subsystem of instruction. The program analysis includes data on student progress so that accurate predictions can be made concerning numbers of students and staff necessary. In addition, information can be made available to students to help them make appropriate decisions. The instructional component of the system is analyzed in detail so that each specific decision a student must make is identified, and information is presented so that accurate decisions are possible. (Authors)

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Systems Approach to Individualization

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"Individualization is not a function of the nature of the learning activity" (Edling, CA, 1970) but is a function of the implementation and management of the learning activities. The necessity for making the best possible decisions concerning individualized instruction emphasizes the desirability of understanding all the variables pertinent to the decision. Since the implementation of systematic analysis procedures to educational situations, decisions have been made with more confidence in the projected outcomes.

Individualized educational systems are naturally composed of specific subsystems (record keeping, instruction, evaluation, etc.). Each of these subsystems are coordinated into a major system that permits the appropriate implementation and management of the learning activities. The majority of educational systems develop downward from a general to specific component, and this paper outlines the analytic procedures of one such effort. The program analyzed is ISTEP (Individualized Secondary Teacher Education Program) at Brigham Young University. This paper illustrates an analysis of the complete program and then illustrates one of the subsystems.

Program Analysis

ISTEP was organized from the traditional secondary foundations and methods courses. At BYU this program totaled 21 semester hours in six classes and a practicum. Program staff systematically sifted the content

of each course and wrote the expected outcomes in specified competencies or processes. These outcomes were then compared and redundancy eliminated. The result was 102 individual student performances.

The program can now be examined by looking at two different patterns. First, the outcomes can be organized into groups so that objectives related to each other either in content or activity can be considered as units. In ISTEP the outcomes were organized into eight units based primarily on content. Some of the behaviors in one unit may be prerequisite to other behaviors within the same unit or to behaviors in other units. This organization allows the student the choice of achieving all the objectives in one unit that are similar in content or a student may pursue a particular activity that cuts across two or more units.

The second pattern divides the program into three types of behaviors: (1) prerequisite behaviors; (2) practicum behaviors; (3) minimal behaviors. The prerequisite behaviors are those behaviors that must be completed prior to participating in a practicum experience. They include all those behaviors deemed necessary for a successful experience. The practicum behaviors are those that can only be achieved in the environment of a classroom. The minimal behaviors are those which are designated as demonstrating minimal competence of a beginning teacher. The outcomes expected in each of these three areas can be evaluated separately allowing for the more effective implementation of diagnostic and remedial measures for each student. Figure 1 illustrates this pattern.

Data collected on ISTEP students over the past several years permit estimates of how many students will be identified as needing assistance to achieve each of the three types of behavior. As Figure 1 illustrates 8 percent of the students in the program at any one time were

not permitted to go on to the practicum experience without additional work. Of those having the practicum experience, 3 percent had to repeat it. Finally, fully 25 percent of all students failed to achieve the minimal competencies of a beginning teacher by the end of the formal program session. These percentages are important for future enrollment, staffing and facilities because the students not achieving these specified competencies would need to be involved in future sessions. Thus eight percent of the total enrollment will need help achieving prerequisite behaviors. Three percent of the remaining students or 2.7 percent of the total will need additional practicum experience and 22 percent of the total will need additional time to master minimal competencies. These numbers remain fairly constant over several sessions of the program.

Instructional Subsystem

This subsystem of the program was selected for analysis because of the detail involved and the necessity of adequate decisions in this critical area. Since most students entering ISTEP have had no experience with individualized programs before, they are very frustrated initially. An analysis of this subsystem serves as a road map through the maze of decisions in learning a particular competency. Figure 2 illustrates the steps that must be present for a student to achieve the desired learning.

An individaulized approach does not necessarily simplify the learning process. The process meets student needs only as the student perceives those needs and is able to make appropriate decisions. Figure 3 illustrates the logical sequence a student should follow from beginning

until he achieves the objective. Choice points are identified and the appropriate sequential step specified depending upon whether the previous step was ahcieved (Y) or not achieved (N). Table 1 is a written description of each step.

Using the systems approach to individualize has some other advantages which facilitate the operation of the program. Data collected concerning each student's success or failure on the objectives and the choices he makes indicate that in ISTEP 20% of the students elect to modify some of the objectives. This is an option open to them in determining how they are going to achieve the particular objective. This information permits the staff to make changes especially in those objectives that tend to be modified often.

Similarly data can also be collected to predict how many objectives may be achieved on the first attempt and how many on each consecutive attempt. This information coupled with data on how many students will need more than one attempt permits fairly accurate staff assignments. For example, in ISTEP ninty percent of all students were able to achieve objectives on the first attempt and ninty-eight percent achieved objectives on the first two attempts. Finally with little adjustment data is available about how long it takes students to achieve any objective.

Conclusion

Analysis of an individualized program in this fashion permits more realistic faculty load determination, predicting student problems, allow students to make better decisions, and monitor student progress. Problems will be more readily identified and steps can be taken to remedy in-

appropriate procedures. Using a systems analysis allows individualized programs to be managed efficiently and maximize student and faculty efforts.

Once established, the system functions rather automatically and can be used as a prototype to design and test materials and procedures. The crucial pivot is balance between a structured system of behavioral goals and flexibility which will allow and encourage each student to maximize his potential.

1. ENTERING STUDENTS
2. INSTRUCTIONAL SYSTEM
3. HAVE PRACTICUM PRE-REQUISITES BEEN ACHIEVED?
4. PRACTICUM
5. HAS PRACTICUM BEEN ACHIEVED?
6. ARE MINIMAL OBJECTIVES ACHIEVED?
7. PROGRAM COMPLETED

A. PRACTICUM PRE-REQUISITES NOT ACHIEVED P=.08
B. PRACTICUM NOT ACHIEVED P=.03
C. MINIMAL OBJECTIVES NOT ACHIEVED P=.25

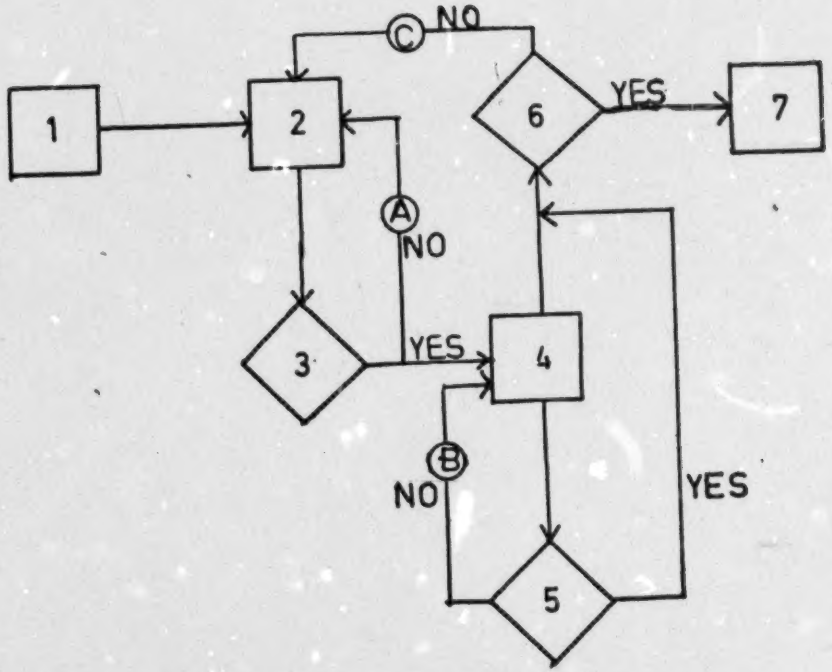

FIGURE 1. INDIVIDUALIZED TEACHER TRAINING MODEL

1. START
2. PRETEST
3. PRE-REQUISITE UNIT
4. LEARNING ACTIVITIES
5. EVALUATION
6. DIAGNOSIS ERRORS
7. MODIFY OBJECTIVE
8. REVIEW
9. ALTERNATE LEARNING ACTIVITIES
10. NEXT OBJECTIVE

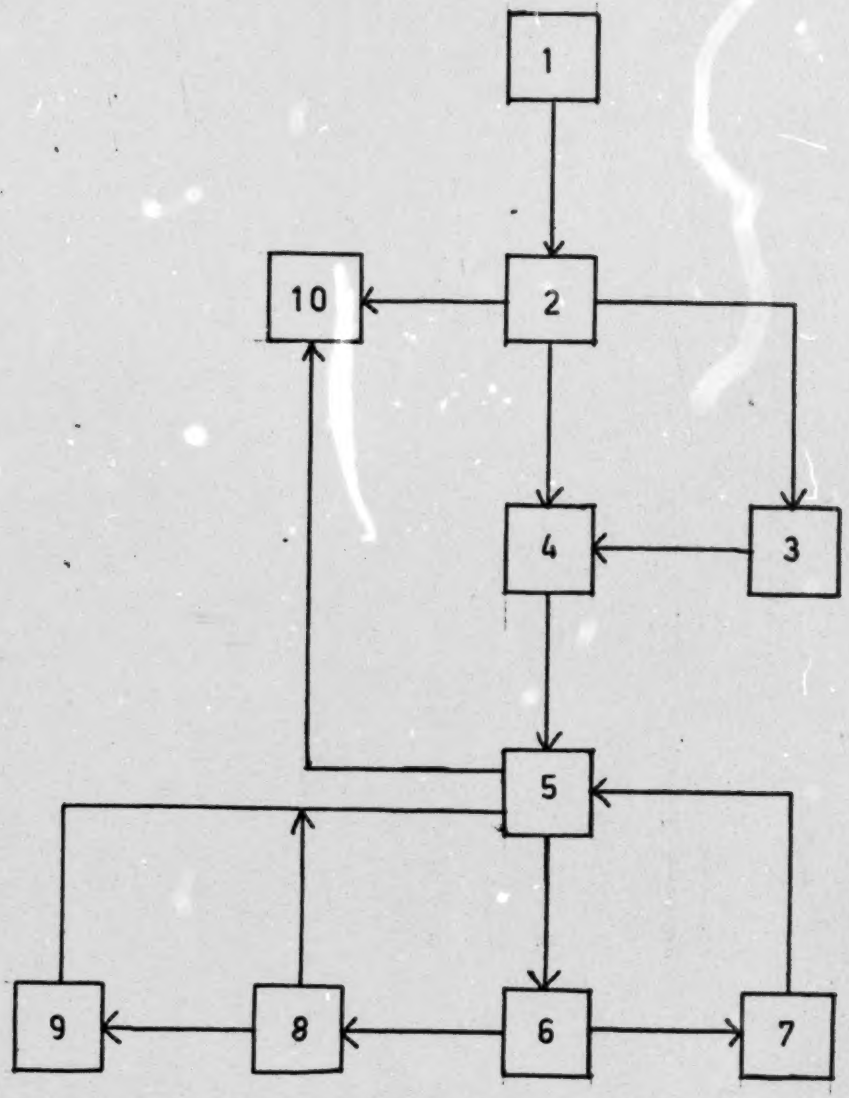

FIGURE 2. INDIVIDUALIZED INSTRUCTIONAL SYSTEM

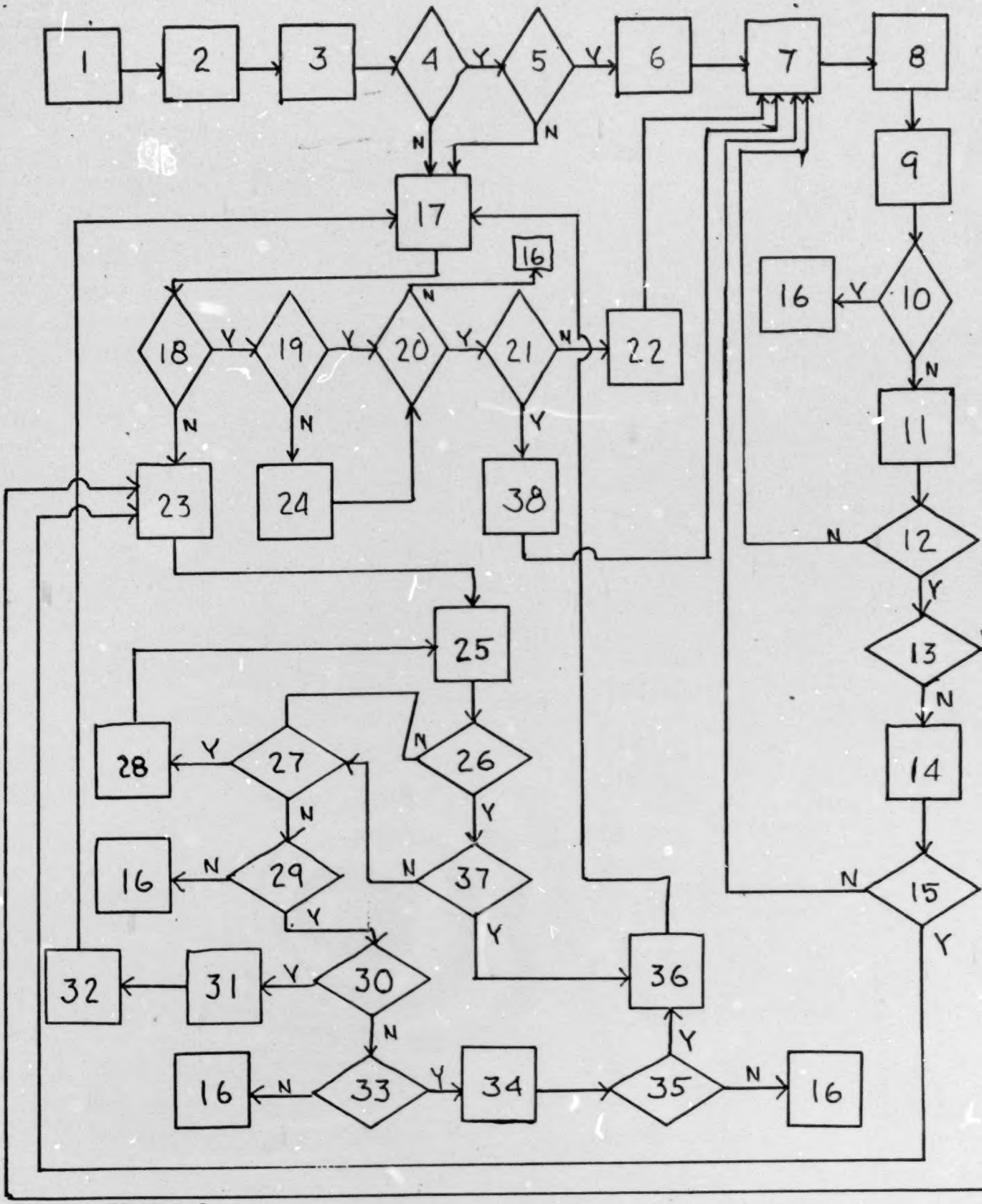
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FIGURE 3.

Choices and Activities of Students Completing

Behavioral Objectives in I STEP

1. Start
2. Read objective
3. Translate requirements (understand them)
4. Accomplished in Teacher Education 301 ?
5. 301 teacher available?
6. Obtain teacher signature
7. Complete evaluation form
8. Submit completed work
9. Wait while work is being evaluated
10. Objective achieved?
11. Analyze why objective was not achieved
12. Any evaluator comments on completed work?
13. Are the criticisms or comments reasonable?
14. See instructor
15. Is additional work necessary?
16. Choose another objective to work on
17. Read evaluation requirements
18. Can I achieve the objective?
19. Am I certain I can achieve the objective?
20. Is today Test Day (all tests administered twice a week)
21. Have I already taken the pretest?
22. Take pretest
23. Read all Learning Activity descriptions
24. See instructor
25. Choose "best" Learning Activity (the Activity that will take the least time and yet ensure that I will be able to achieve the objective.)
26. Do I have the time to work right now?
27. Are there other Learning Activities available that I have not yet looked at or done?
28. Read the remaining Learning Activity descriptions
29. Should I still work on this objective?
30. Is the instructor available?
31. See instructor
32. Follow instructor's suggestions
33. Do I have time to look for the learning materials referenced by the Learning Activity?
34. Look for learning materials (ask another student, visit Reserve Library, see staff member, ask secretary)
35. Did I find the materials?
36. Complete the Learning Activity
37. Is the learning material specified in the Learning Activity available?
38. Take the posttest.

Table 1